



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/772,752

02/05/2004

Marc O. Woontner

14460

5715

Maria Eliseeva
Suite 4
4 Militia Drive
Lexington, MA 02421

7590

09/07/2011

EXAMINER

CHANG, AUDREY Y

ART UNIT

PAPER NUMBER

2872

MAIL DATE

DELIVERY MODE

09/07/2011

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/772,752	Applicant(s) WOONTNER, MARC O.	
	Examiner AUDREY Y. CHANG	Art Unit 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 July 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1 and 3-16 is/are pending in the application.
- 5a) Of the above claim(s) 7-10 and 12-14 is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1, 3-6, 11, 15-16 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Remark

- This Office Action is in response to applicant's amendment filed on July 8, 2011, which has been entered into the file.
- By this amendment, the applicant has amended claims 1, 3, 5, 11, 15, and 16 and has canceled claim 2.
- **Claims 7-10 and 12-14 are withdrawn** from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention group, there being no allowable generic or linking claim. Election was made **without traverse** in the reply filed on May 9, 2005.
- Claims 1, 3-6, 11, and 15-16 remain pending in this application.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. **Claims 1, 3-6, 11 and 15-16 are rejected under 35 U.S.C. 112, first paragraph**, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claims 1 and 11 have been amended to include the phrase "wherein the reflection angle for each panel is different from the reflection angle for each other panel". The term "reflection angle" is confusing and wrong. But if this term means "reflection angle", then the specification fails to positively support that all of the panels have different reflection angle from each other.

Claim 15 has been amended to include the phrase "each holographic pixel is a separate portion of a corresponding color panel". In light of the earlier part of the claim, "wherein all pixels tinted in the

Art Unit: 2872

same primary color diffract light at distinct predetermined diffraction angle", this phrase is not supported by the specification since as shown in Figure 2, all of the holographic pixels in a color panel have the **same** diffracted angle.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 1, 3-6, 11, 15 and 16 are rejected under 35 U.S.C. 112, second paragraph**, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, and 11 have been amended to include the phrase "wherein multiple separate portions of each panel are selectively transferrable onto the substrate to become parts of an image on the substrate" that is confusing and indefinite. It is not clear what these "multiple separate portions of each panel" are. It is not clear if this means *each* panel has "multiple separate portions" or if the phrases mean that each separate portion has *multiple panels* that are selectively transferrable onto the substrate to form an image. Clarifications and amendment to the claims are required. It is also not clear how does "multiple separate portions" relate to "plurality of pixels" as recited claim 3. The applicant is respectfully requested to state the clear logical and structural relationships among the various terminology introduced in the claims to make the scopes of the claims clear.

The newly amended phrase "from the refraction angle for each other panel" recited in amended claims 1 and 11 is confusing and indefinite since it is not clear what is "refraction angle"?

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1, 3, 6, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Rice (PN. 5,396,839).**

Rice teaches a multi-layer printing structure *for* forming an image, (please see Figures 1, 7, and 14 and columns 8-9) that is comprised of a *plurality* of *panels* (52, Figure 7 or 152, Figure 19, column 14, lines 49-52) including a plurality of ink dots (55, Figure 7) wherein the ink dots are forming of an embossable layer (55, in Figures 8-11, 115, in Figure 16, or 146, in Figure 18) and a printing stock. The printing stock (22) as shown in Figures 1 and 14, comprises a surface layer (23) and a stock (22), wherein the stock (22) serves as the substrate. Rice teaches that the plurality of panels (52) is non-overlapping and is formed of consecutive panels, (please see Figure 7). Each panel includes an ink dot which therefore is tinted with one of the primary colors-red, green and blue, (please see Figure 7), which can be made to represent an intended color image (39). Rice further teaches that the ink dot of each panels can be *embossed* with a diffraction gratings selected from a plurality of different diffraction gratings (56, the designations of "8", "9" and "10" in Figure 7 referred to different embossed diffraction gratings as shown in Figures 8, 9 and 10), respectively, wherein each of the diffraction gratings is capable of diffracting and reflecting one of the primary colors, (please see column 8, lines 49-63). Rice teaches the diffraction gratings embossed on the embossable layer are capable of diffracting and reflecting red, blue or green colors. By arranging the individual diffraction gratings in certain combination, Rice further teaches that additive effect can be achieved so that by arranging different combinations of the embossed diffraction gratings in a panel, for instance with (55) embossed to separately diffract blue and red color would reflect

Art Unit: 2872

the color magenta, (please see column 9, lines 30-43). Rice also teaches that the deformable ink (54) (for eventually forming the ink dots, please see column 9, lines 20-25) is applied to the printing plate (31) to create half-tone images, which become the composite image (48), where the ink may include various color such as yellow, magenta and cyan, (please see column 5, line 30-40). The ink (54) is then pressed onto surface layer (23) of the printing stock (22, Figure 1) together with the embossed diffraction gratings, to form the plurality of pixels or panels.

This reference has met all the limitations of the claims. With regard to the feature concerning each individual panel is to diffract incoming light at a predetermined reflection angle, Rice teaches explicitly that the diffraction gratings are embossed by using mold and the diffraction pattern on the mold is formed by holographic method, (please see column 10, lines 21-40). This means that the diffraction gratings are holographically configured. The diffraction gratings would diffract the incident light to form spectra of light. By viewing the spectra of light produced by the diffraction grating at *different range of angle* different wavelengths or colors of light can be seen, (please see column 8, lines 49-54). This means that the diffraction grating would diffract different color of light at different range of angles, based on the fundamental theory of the diffraction grating. The diffraction gratings designed to diffract and reflect red color (R) would fundamentally have different **ranges** of the diffraction angles than the diffraction grating designed to diffract blue or green color of light. Since Rice does teach explicitly that according to the diffraction theory a diffraction grating **inherently** diffracts and reflects incoming light into beams of *spectra*, which means different color of light will be diffracted and observed at a *different angle rang* and the angle of diffraction and reflection of the incoming light for the diffraction grating is determined by the grating structures such as the pitches and orientations of the grating grooves, (please see column 8 line 59 to column 9, line 18), it would then have been obvious to one skilled in the art, *if this is not already of the case* for the structure of Rice, to design and make the panels to diffract different color of light with

Art Unit: 2872

different diffraction angle and therefore the reflection angle for the benefit of allowing different color effect and decorative appearance be observed at different viewing angle.

Claims 1 and 11 include the phrase that at least three panels are tinted with different primary colors. Rice teaches as shown in Figure 7, at least three panels are tinted with different color such as red, blue or green, (i.e. R, G, B shown in Figure 7).

Claims 1 and 11 have been amended to include the phrase "multiple separate portions of each panel are selectively transferrable onto the substrate to become parts of an image on the substrate". This phrase is rejected under 35 USC 112, second paragraph above. This phrase can only be examined in the broadest interpretation. Rice teaches that each pixel (51, Figure 7) may include multiple separate panels (52) that are selectively transferrable onto the substrate to form the image. Or one can also interpret the cited Rice reference as grouping the same "panel" (52) with the same color to form the multiple separate portions or one can arbitrarily divided up each panel (52) into multiple portions as desired. The applicant is respectfully noted that product-by-process limitations such as "selectively transferrable" is not given a patentable weight for it does not differentiate the final product from the prior art.

With regard to claim 3, the ink dots embossed with the same diffraction grating can be grouped together as the "panel".

With regard to claim 5, the scopes of the claim are not clear. It is not clear how does the diffraction angle is capable of *encoding* a number. It is true that the diffraction angle for different color of light will be different based on the diffraction theory.

The same reasons of rejection above are applied to claim 11.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Rice as applied to claim 1 above, and further in view of the patent issued to Mallik et al (PN. 5,085,514).

Art Unit: 2872

The multi-layer structure for forming an image taught by Rice as described for claim 1 above has met all the limitations of the claim. This reference however does not teach explicitly to include the claimed layers. Mallik et al in the same field of endeavor teaches a layer structure for making replication of embossed microstructure wherein the layer structure include a web (111, Figure 11) serves as the thermal stable layer, a strip coating (197) serves as the wear resistant layer, an embossable layer (199) with embossed microstructure, a reflective layer (201) for overlaying the embossable layer and an adhesive layer (203) which is heat activated to adhere the multi-layer structure to a substrate (205, Figure 12, please see column lines 23-40). It would then have been obvious to one skilled in the art to apply the teachings of the layer structure of Mallik et al to modify the multi-layer structure of Rice to provide wear-resistant protection as well as adhesive means to make the multi-layer structure with image formed easily attached to desired substrate agent.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Rice as applied to claim 1 above, and further in view of the patent issued to Moon et al (PN. 7,126,755).

The multi-layer printing structure *for* forming an image taught by Rice as described for claim 1 above has met all the limitations of the claims. **Claim 5 has been amended** to assign the reflection angle with a number *for use* in a device. The *intended use* nature of the process does not differentiate the multi-layer printing structure since it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. Ex parte Madham, 2 USPQ2d 1647 (1987).

Furthermore, it is known in the art to label an object with an encoded information and reading the encoded information to identify the object, as explicitly taught by Moon et al. Moon et al teaches that an encoded element (8, Figure 4) can be placed on a physical body to be read by a reading device (please see

Art Unit: 2872

Figure 2) to reveal the coded information about the object. It would then have been obvious to one skilled in the art to apply the teachings of Moon et al to provide encoding information in the structure for the identification purpose.

9. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Rice (PN. 5,396,839).

Rice teaches a material or structure for forming an image, (please see Figure 7, columns 8-9) that is comprised of a plurality of ink dots (55, Figure 7), serves as the a plurality of *holographic pixels*, (52) each dot is being embossed with a diffraction grating (56) that is capable of diffracting and reflecting incoming light in a predetermined diffraction angle, (please see Figure 7, columns 8-9). Rice teaches that the ink dots comprise ink (54) that includes one of the primary colors, (please see column 7, lines 45-50). Rice teaches that the ink dots having the embossed diffraction grating are applied to a printing stock (22, Figures 1, and 8-10), wherein the printing stock comprises a surface layer (23) and a stock (22), wherein the stock (22) serves as the substrate. Rice teaches that at least two panels or pixels, (52) are being tinted (using ink 54) with different primary colors such as red, green or blue, (R,G, B as shown in Figure 7). This reference does not teach explicitly that the primary colors are yellow-magenta-cyan, but since this is well known in the art to use RGB primary colors or YMC primary colors is considered to be obvious matters of design choices to one skilled in the art to design the printing material as desired.

Rice teaches explicitly that the diffraction gratings are embossed by using mold and the diffraction pattern on the mold is formed by holographic method, (please see column 10, lines 21-40). This means that the diffraction gratings are holographically configured and the pixels are holographic pixels.

Art Unit: 2872

Rice teaches that the diffraction grating is capable of diffracting and reflecting the incident light to produce spectra. The spectra of light is produced by diffraction of grating at different ranges of angles. This means different color of light can be viewed at different range of angles, (please see column 8, lines 49-63). This means the diffraction gratings for diffracting different primary color of light is diffracting the color light at different ranges of angles.

Claim 15 includes the phrase that all pixels tinted in the same color diffracting light at a distinct diffraction angle different for each primary color. Based on the fundamental diffraction theory stated above, the holographic pixels for different color do diffract the different color of light into different ranges of angles. Furthermore, since Rice does teach explicitly that the angle of diffraction and reflection of the incoming light for the diffraction grating is determined by the grating structures such as the pitches and orientations of the grating grooves, (please see column 8 line 59 to column 9, line 18), it would then have been obvious to one skilled in the art, *if this is not already of the case* for the structure of Rice, to design and make the panels to diffract different color of light with different diffraction angle and therefore the reflection angle for the benefit of allowing different color effect and decorative appearance be observed at different viewing angle.

Claim 15 has been amended to include the phrase “wherein each holographic pixel is a separate portion of a corresponding color panel selectively transferrable onto the substrate”. This phrase is rejected under 35 USC 112, first and second paragraph, for the reasons stated above. It is within general level of skill of an ordinary worker in the art to make the holographic pixels tinted with the same primary color to be grouped as a color panel. The applicant is respectfully noted that product-by-process limitations such as “selectively transferrable” is not given a patentable weight for it does not differentiate the final product from the prior art.

Art Unit: 2872

10. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over the patent issued to Rice as applied to claim 15 above, and further in view of the patent issued to Moon et al (PN. 7,126,755).

The multi-layer printing structure *for* forming an image taught by Rice as described for claim 1 above has met all the limitations of the claims. **Claim 16 has been amended** to assign the reflection angle with a number *for use* in a device. The *intended use* nature of the process does not differentiate the multi-layer printing structure since it has been held that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the claimed structural limitations. *Ex parte Madham*, 2 USPQ2d 1647 (1987).

Furthermore, it is known in the art to label an object with an encoded information and reading the encoded information to identify the object, as explicitly taught by Moon et al. Moon et al teaches that an encoded element (8, Figure 4) can be placed on a physical body to be read by a reading device (please see Figure 2) to reveal the coded information about the object. It would then have been obvious to one skilled in the art to apply the teachings of Moon et al to provide encoding information in the structure for the identification purpose.

Response to Arguments

11. Applicant's arguments filed on July 8, 2011 have been fully considered but they are not persuasive. The newly amended claims have been fully considered and they are rejected for the reasons stated above.

12. Applicant's response fails to point out the specific issues concerning the cited reference which therefore are regarded as inadequate to overcome the rejection. The applicant is respectfully noted that the product-by-process limitations such as "multiple separate portions of each panel being selectively transferrable" is not given patentable weight for it does not differentiate the final product from prior art.

Art Unit: 2872

The limitations seem to relate intended use or intended printing process for using the device that are not given patentable weight. (Please see MPEP 2173,05(p)).

Conclusion

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to AUDREY Y. CHANG whose telephone number is (571)272-2309. The examiner can normally be reached on Monday-Friday (9:00-4:30), alternative Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2872

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AUDREY Y CHANG, Ph.D.
/AUDREY Y CHANG/
Primary Examiner, Art Unit 2872